Prelab 24: Spectroscopy

Name:

1. Define continuous spectrum and line spectrum. (10 pts)

- 2. What is the range of frequencies of visible light? What is the range of wavelengths of visible light? (20 pts)
- 3. Using Eq. 24.1 and the grating spacing given in the lab procedure, calculate the wavelength of a spectral line assuming that θ is equal to 13.86° and the order number is one (*i.e.*, m = 1). What is the color of this line? (20 pts)

4. Where is the second order line of the spectral line in Question 3? Calculate θ for this wavelength while m = 2. (20 pts)

5. What are the first three wavelengths of the Balmer series? Show work. [Note: Eq. 24.2 requires that $n \ge 3$] (30 pts)